



ABOUT | CONTACT | HELP | ADVI

SEARCH ARTICLES

Search our archives for print and web articles...

Detailed Search

CAREERS

Salary Survey
Job Search
ADVANCE Job Fairs

BUYERS GUIDE

Company Search
Product Search

EVENTS

Convention News
Events Calendar

FROM PRINT

Current Print Contents
Articles of Interest
Dispensing
Consumer Education Handouts
Practice Management

RESOURCES

Action Center
Ethics Up Close
Bulletin Board
Links
References
Writer's Guidelines

FEATURES

Hearing Conservation for Commuters

Kerri Waldowski

Study gauges listening levels of car sound systems

According to the U.S. Department of Transportation, the average daily commute to work takes 29.5 minutes, which amounts to about five hours a week for most Americans.¹ While many drivers tune in to their car radio or sound system to pass the time, few consider whether they are listening at safe levels.

"Some people are listening to their car radios at dangerously high levels," Sharon A. Lesner, PhD, told *ADVANCE*. "Considering the average commute time, people need to recognize that they are exposed to these sounds over long periods of time, which can be damaging to their hearing."

Even she, an expert in the field, found herself turning up the volume higher and higher on her car stereo system. Dr. Lesner, a professor of audiology at the School of Speech-Language Pathology and Audiology at the University of Akron in Ohio, began to notice a slight hearing problem and wondered if the listening levels in her car were causing a hearing loss.

"If I'm playing my radio at these levels and I know so much about the ear, it made me wonder what other people were doing," Dr. Lesner said.

She approached a number of students in the Speech-Language Pathology and Audiology Department at the university, and the group undertook a research project to determine typical listening levels for car sound systems.

The research team assembled 52 volunteers: 26 majors in the field, and 26 people outside the field. In addition to gathering data for the documentation of typical listening levels, the investigators sought to compare the average listening levels of the two groups in order to determine if being educated on the subject made a difference.

The participants started their vehicles, with instructions to leave the volume level where they had set it last. The typical program choices for the subjects were documented as talk, country, hard rock, pop, rap and dance music.

The researchers measured sound levels for the length of the piece or, in the case of talk radio, for three minutes with a programmable, noise-logging dosimeter. This enabled them to take measurements every second. The microphone was placed at the volunteer's right shoulder, and all windows were shut. The vehicles remained idle.

"We found that there was quite a range in terms of sound levels at which people played their systems," Dr. Lesner said.

The car sound system listening levels ranged from approximately 60 dB to 100 dB.

"Usually, sounds 85 dB and higher are potentially dangerous depending on how long you listen to the sounds," she explained.

Nine of the 52, or 17 percent of the participants had a time-weighted average (TWA) over 85 dBA.

"Some of the levels really did surprise me, particularly when you look at the time-weighted averages," said Drew Dundas, a graduate student in speech-language

pathology and audiology who assisted with the research.

In comparing the two groups of volunteers, it was evident that the speech and audiology majors tended to listen at lower levels than non-majors. The average level for majors was 68 dBA, compared to 83 dBA for non-majors.

One particular segment of the sample group well surpassed the others' typical car sound system listening levels, the researchers determined. Five individuals drove "boom cars," which contain systems designed specifically to amplify low frequencies. Noise from these vehicles was measured at a TWA of 95 dBA, although the researchers measured sounds in excess of 127 dBA.

Intrigued by the notion of the "boom car," Dr. Lesner began doing additional research.

"They are absolutely incredible, and the owners are quite competitive," she said. "We found information about different 'boom car' associations and international groups that hold sound-off competitions. They have measured sound pressures of 177 dBA."

The drivers of these vehicles typically listen to rap or dance music, she noted.

Choosing a lower listening level benefits any driver, but the level must be significantly lower for the person's hearing to no longer be at risk.

"Listening at 80 dB, for example, may not be doing damage in and of itself, but this listening is just a contributing factor to all the various exposures to noise in daily activities," Dr. Lesner pointed out.

She also addressed the issue of safety.

"Not only can listening to a car stereo potentially cause hearing loss, but it can be distracting and interfere with our ability to hear emergency sirens," she said. A siren is ineffective if it is not 8-12 dB louder than the background noise of a car. Listening levels often surpass the volume emitted from emergency sirens.

The University of North Carolina Highway Safety Research Center studied the causes of various accidents due to driver distraction and determined that 11.4 percent of accidents were caused by adjusting the car radio, cassette or CD player.² This percentage is significantly higher for young drivers under age 20.

People need to become aware of the dangers of distraction while driving as well as the potential hearing loss that can result from listening to their stereos too loudly, Dr. Lesner said. "It really is about public education. Young people tend to think they are invincible, so they really don't care how loudly they play their music."

Public education can be quite effective, Dundas agreed. "If you look at the breakdown in measurements between majors and non-majors, just the fact that the people in the major of audiology and speech-language pathology played their stereos at significantly lower levels points to the fact that awareness is going to change the way people listen to their stereos, and they will potentially do less damage to themselves."

The researchers provided participants in the study with information about hearing loss and its contributing factors. A few drivers of the boom cars later told Dundas that they no longer played their music as loudly after gaining a better understanding of the risks.

Additional follow-up studies are necessary, Dr. Lesner said. She plans to study and document changes in hearing, specifically involving temporary threshold shifts, otoacoustic emissions and permanent hearing loss.

References

1. U.S. Department of Transportation. (2001). Study accessed via www.myprimetime.com/play/travel/content/creative_communiting/index.shtml
2. Stutts, J.C. (2001). Driver distractions: Electronic devices in the automobile. Testimony before the Subcommittee on Highways and Transit Hearing. University of

North Carolina Highway Safety and Research Center, Chapel Hill, NC.

For more information contact:

- *Sharon A. Lesner, PhD, University of Akron, (330) 972-6118, e-mail: Lesner@uakron.edu*

Kerri Waldowski is an editorial assistant at ADVANCE

 [Send to a Friend](#)  [Printer-Friendly Version](#)

advance RELATED SITES



Got a Minute?

Renew now! [Click here.](#)

[Copyright ©2004](#) Merion Publications
2900 Horizon Drive, King of Prussia, PA 19406 • 800-355-5627
Publishers of ADVANCE Newsmagazines
www.advancweb.com